

Twin Tunnels Design/Construction Technical Team Meeting #8

September 13, 2012
9:00AM – 12:00PM

CDOT
425 Corporate Circle
Golden, Colorado



Agenda

1. **Introductions**
2. **Other Corridor Project Updates**
3. **General Project Updates**
4. **Proposed Solution**
 - » Lighting
 - » Tunnel Portals
 - » Coatings/Color
 - » Bridge Gap
5. **Follow-up**
 - » Public Information
 - » Incident Management Plan
6. **Aesthetics Review**
 - » Bridge area landscape

Step 1
Define Desired Outcomes
and Actions

Step 2
Endorse the Process

Step 3
Establish Criteria

Step 4
Develop Alternatives and Options

Step 5
Evaluate, Select, and Refine
Alternatives and Options

Step 6
Finalize Documentation and
Evaluation Process



Twin Tunnels Design/Construction
Idaho Springs/Clear Creek County

Other Corridor Project Updates

- Frontage Road
- Twin Tunnels EA
- Westbound Tunnel Repairs
- I-70 Expansion Joint Projects
- CDOT Rockfall Program
- Master I-70 Schedule
- AGS Study
- Trailhead Partnership
- Co-Development RFP



Core Values

- **Safety**
- **Mobility**
- **Gateway**
- **Wildlife**
- **The Creek**
- **Destination**
- **History**
- **Constructability**
- **Inclusivity**
- **Schedule**



Twin Tunnels Project Updates

- Anticipated project milestones
 - » Completed FIR for 1A, 1B, and 2
 - » WB tunnel repairs/rockfall mitigation Notice to Proceed (NTP) – Sept. 24, 2012
 - » EA Decision Document signing – November 9, 2012
 - » Pkg 1A NTP – November 12, 2012
 - » Pkg 1B NTP – December 7, 2012
 - » Pkg 2 NTP – February 25, 2013
 - » Pkg 3 NTP – November 1, 2013
 - » Pkg 4 NTP – Spring, 2014





TWIN TUNNELS WIDENING
ISSUES FOR TECHNICAL TEAM PRELIMINARY SCHEDULE

ISSUES	2012														2013											
	MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		JAN		FEB		MAR		APRIL		M	
	2ND WEEK	4TH WEEK	2ND WEEK																							
NOISE/ VIBRATION	—	*																								
TUNNEL LINING	—					*	●																			
RETAINING WALL RAILING	—	*																								
IMPACTS TO TRAFFIC	—	*	●		●		●																			
I-70 RETAINING WALL AESTHETICS		—	*	●	●	●																				
BRIDGE AESTHETICS		—		*		●	●																			
NEPA ANALYSIS OF CONSTRUCTION METHODS	—	*	●																							
ROCKFALL STRUCTURES		—	*	●		●																				
SIGNING			—			*			●																	
ADAPTIVE MITIGATION							*		●				●											●		
PUBLIC INFORMATION				—			*		●			●										●				
IMPACTS TO RECREATION USERS			—	*	●																	●				
INFRASTRUCTURE IN MEDIAN			—						*		●															
COATINGS (COLOR)			—						*	●		●														
LIGHTING			—				*																			
LANDSCAPING				—			*	*	*	*	*	*			●											
TUNNEL PORTAL AESTHETICS				—				*	●		●															
INCIDENT MANAGEMENT PLAN				—			*																			
C.R. 314 FRONTAGE ROAD RETAINING WALL FASCIA					—						*	●														
SOUTH SIDE OF W.B. BRIDGE OVER CLEAR CREEK							—	*																		
TRAILHEAD IMPROVEMENTS											*	●		●									●			
ENHANCEMENT OPPORTUNITIES			—						*		*	*		●			●						*		●	

PACKAGE 1A PACKAGE 1B PACKAGE 2 PACKAGE 3

LEGEND:	
Shaded Items are Complete	Presentation of Concepts
Discuss Criteria	Follow-up (As Needed)

NOTE: FINAL DESIGN AND CONSTRUCTION WILL CONTINUE T MARCH 2014. AFTER FEBRUARY 2013, TECHNICAL TEAM MEE WILL OCCUR ON AN AS NEEDED BASIS, LESS THAN ONCE A M

Twin Tunnels: Roadway & Tunnel Lighting

TTEB-Drive-LTG.mp4

Proposed Solutions: Lighting

Roadway Lighting

- Reuse Existing Poles in “Chain-up” area with additional poles.
- Remove 2 Highmast Poles and fixtures from the East and West side of the Tunnel.
- Replace Highmast Poles with same traditional Roadway Lighting already in place (50ft Poles and 400W HPS Luminaires).
- Add two light poles to the curve west of Hidden Valley to improve safety (RP8 recommendation).



Proposed Solutions: Lighting

Temporary Detour Roadway Lighting

- Wood Poles
- HPS Luminaires
- Overhead Wiring



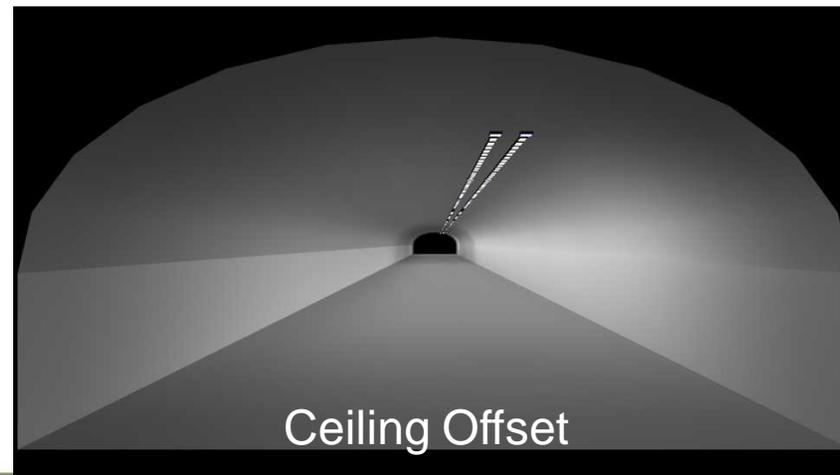
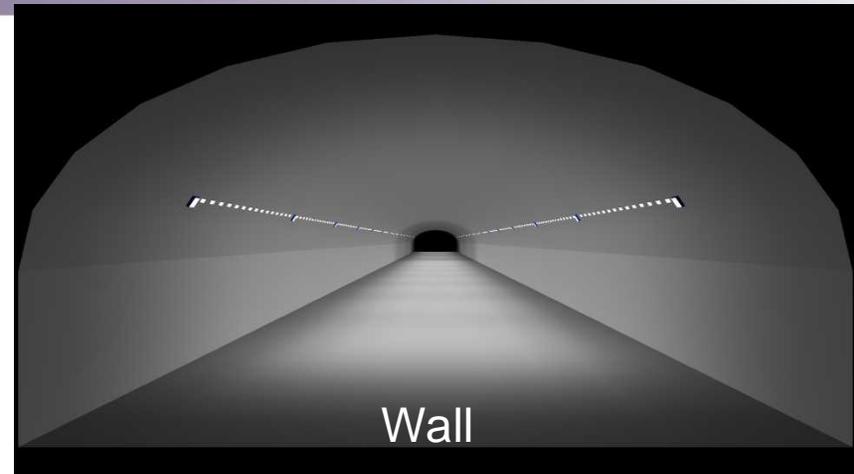
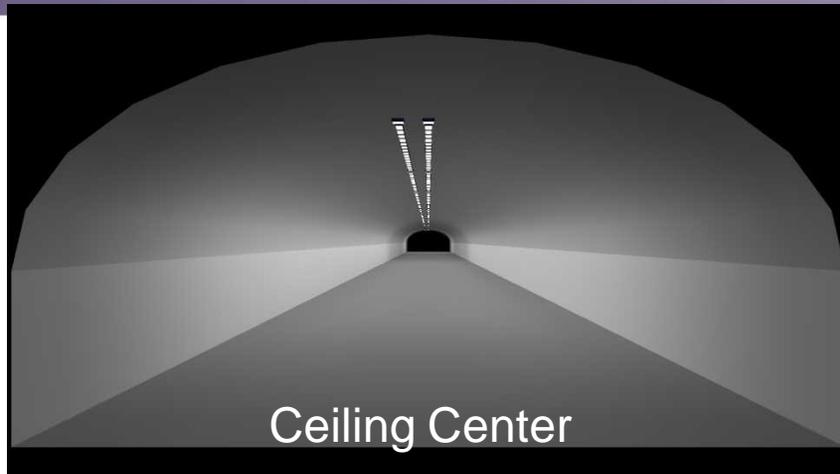
Proposed Solutions: Lighting

Tunnel Lighting

- Source Option A: Reuse as many existing High Pressure Sodium (HPS) Fixtures as possible and additional New HPS Fixtures.
- Source Option B: Replace entire Lighting System with New LED Fixtures.
- Fixture mounting options: Ceiling or wall mount.
- Add trees around new EB Portal.



Proposed Solutions: Lighting Tunnel Luminaire Mounting Options



Proposed Solutions: Lighting

Lseq Method

- Avoiding the “Black Hole” Effect
- Providing enough light inside the tunnel threshold to see a hazard within the tunnel.
- Allowing for a constant driving speed into and throughout the tunnel during daylight hours



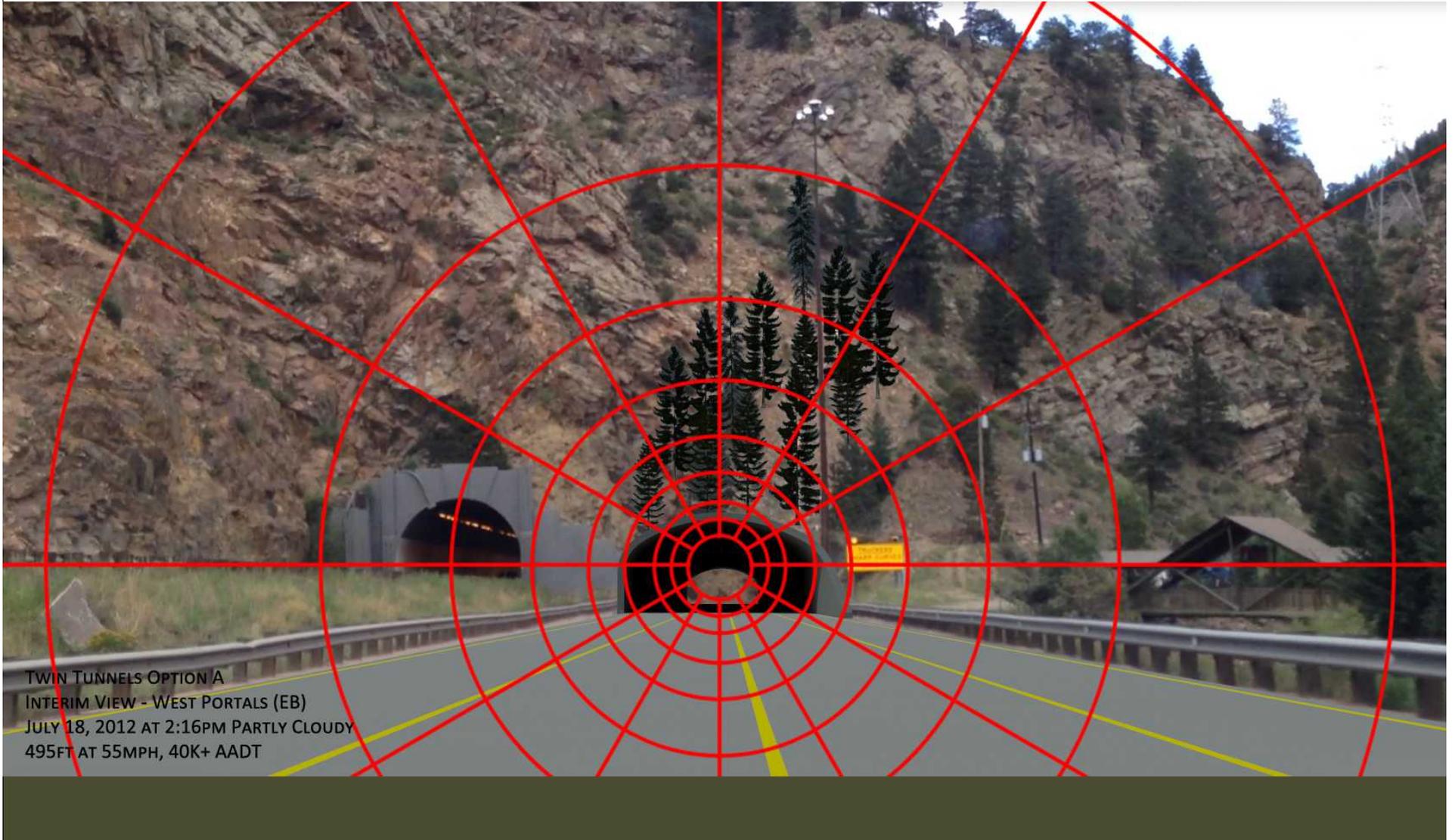
Proposed Solutions: Lighting

Lseq Method

- Determine SSSD (Safe Sight Stopping Distance) per RP-22
- List known factors; Design Speed Limit, Portal Height, Direction of Travel, Geometric Direction of Tunnel, Tunnel Length, and Traffic Volume
- Measurement of environmental luminance's; trees, tunnel, concrete, structures, sky, roadway, rocks, grass, etc.
- [Twin Tunnels Lseq Calculation Sheet](#)



Proposed Solutions: Lighting Twin Tunnel EB Lseq



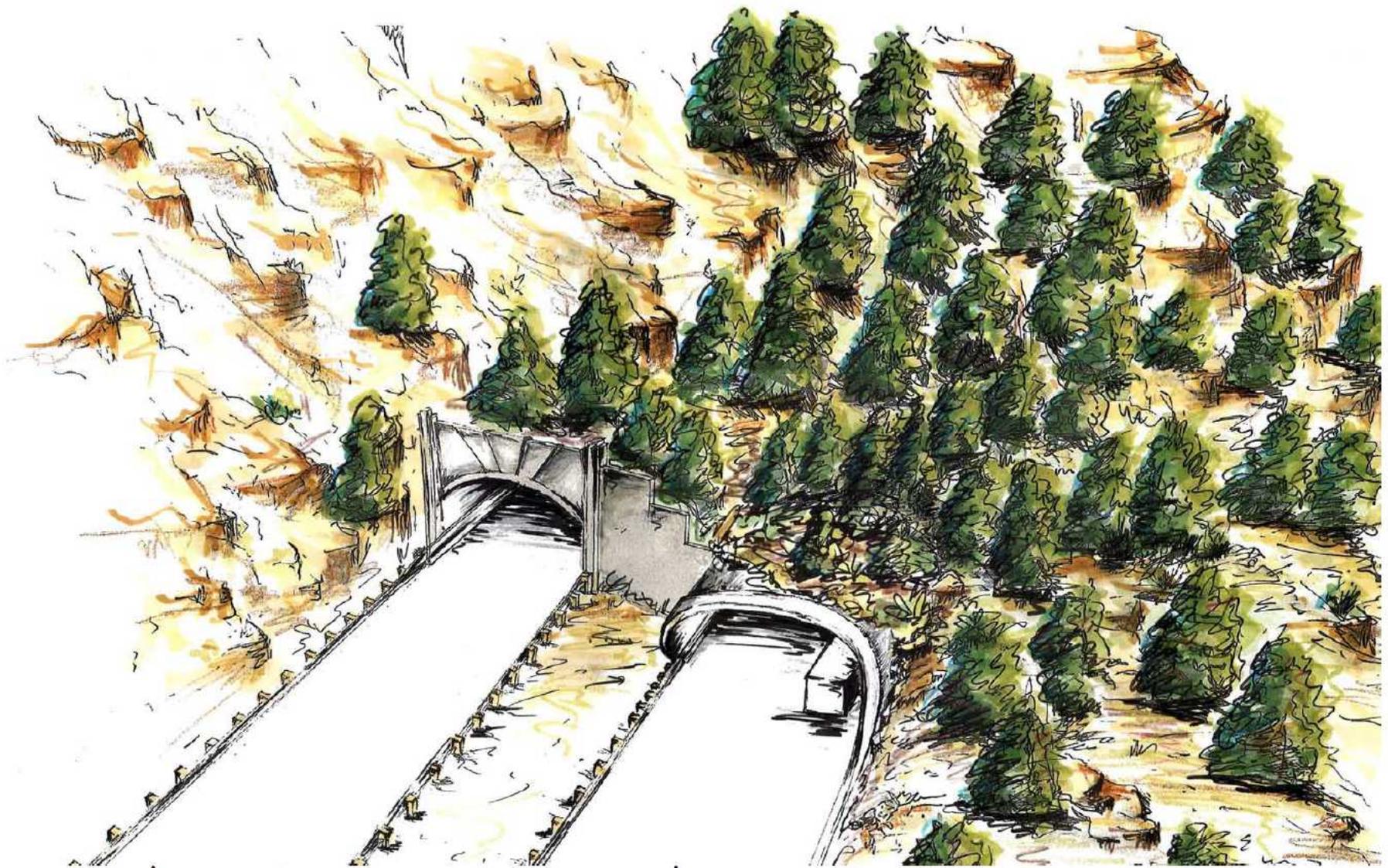
TWIN TUNNELS OPTION A
INTERIM VIEW - WEST PORTALS (EB)
JULY 18, 2012 AT 2:16PM PARTLY CLOUDY
495FT AT 55MPH, 40K+ AADT

Proposed Solutions: Tunnel Portals

- Developed 4 portal options
 - » A – Sleek curve
 - » B – Curve with historic tiara
 - » C – Art Deco
 - » D – Art Deco with historic tiara
- Considered context – natural and historic
- Incorporated sound mitigation, trailhead and lighting concerns



Proposed Solutions: Tunnel Portals

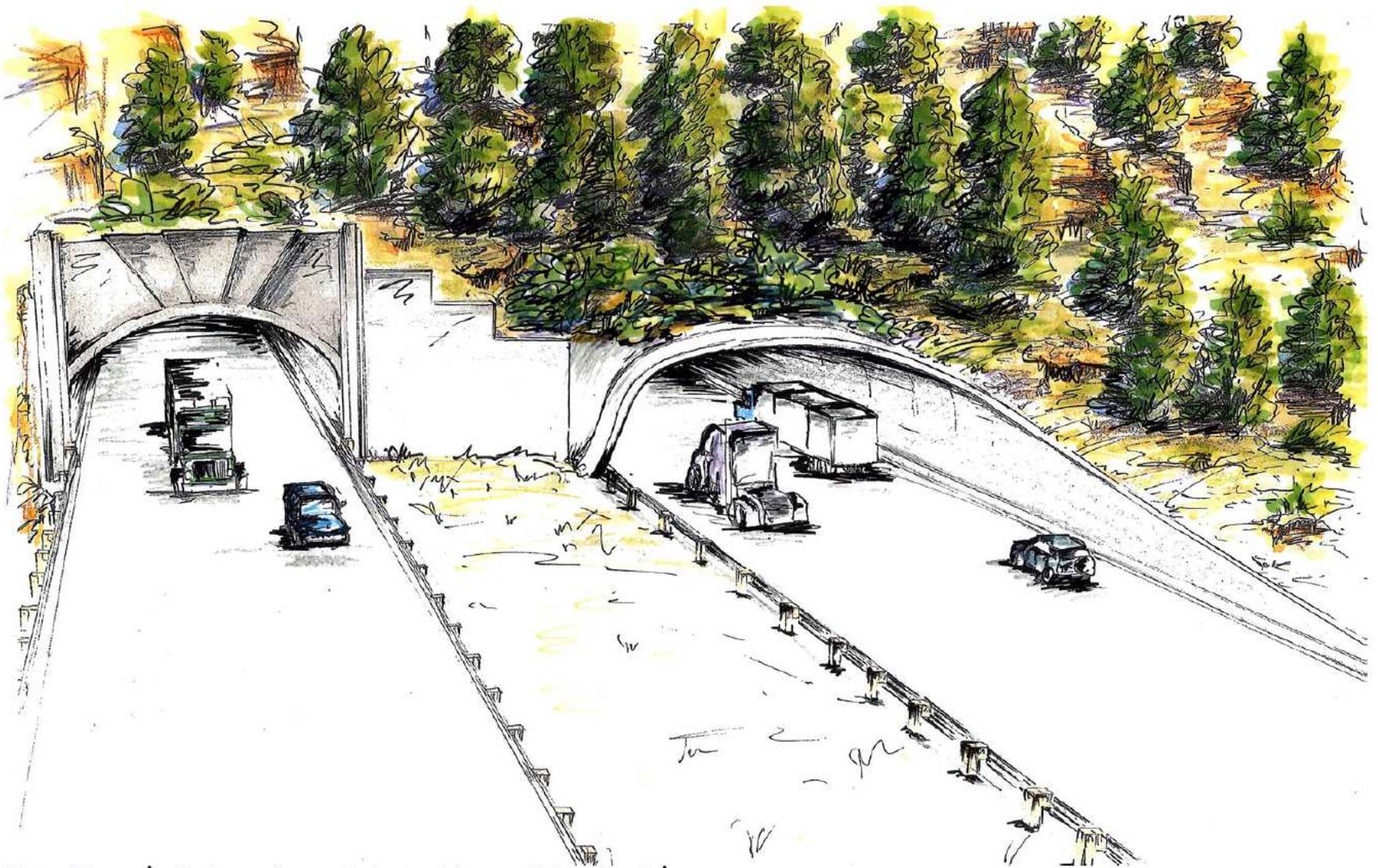


Twin Tunnels Option A

Interim View - West Portals



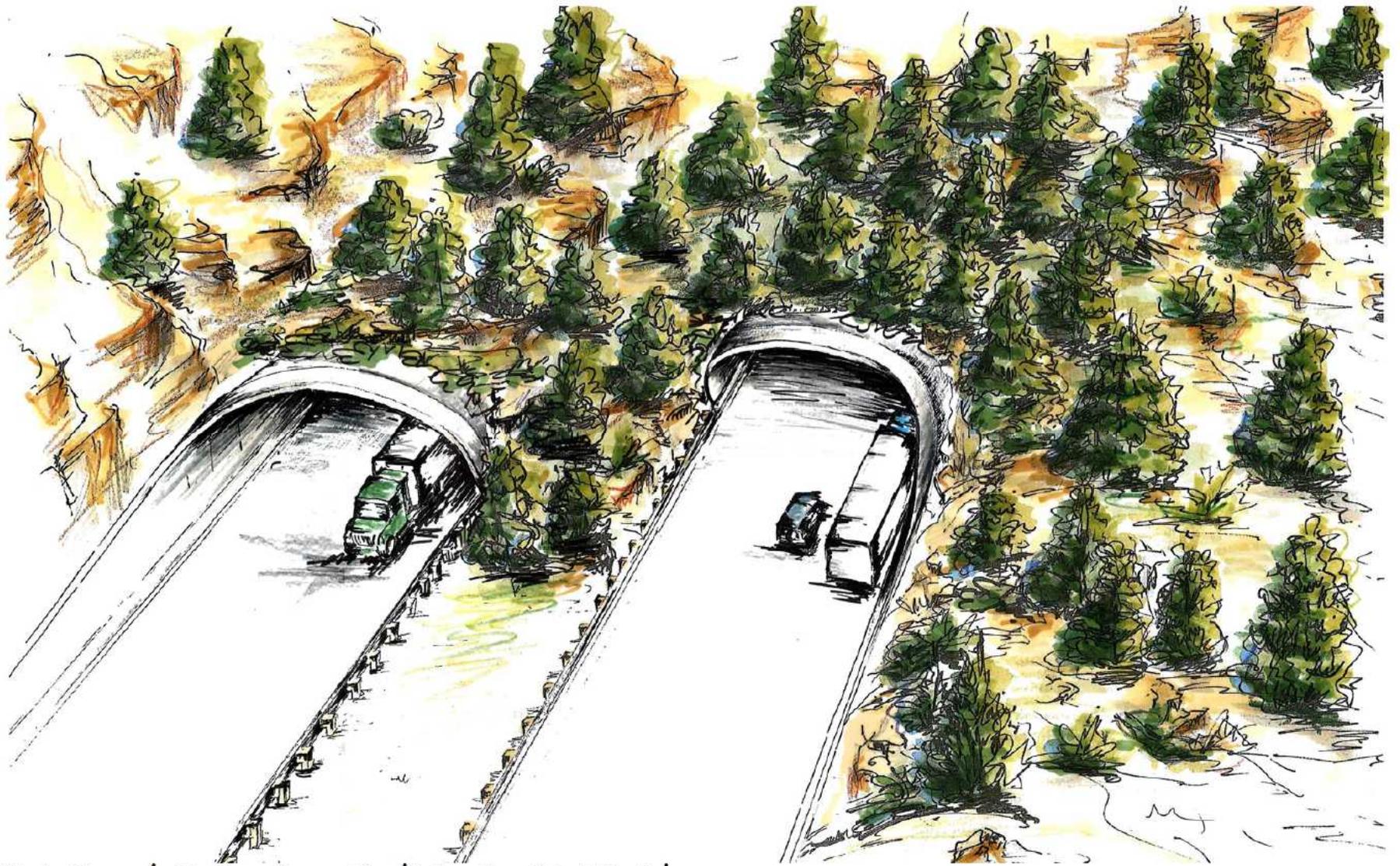
Proposed Solutions: Tunnel Portals



Twin Tunnels Option A

Interim View - West Portals

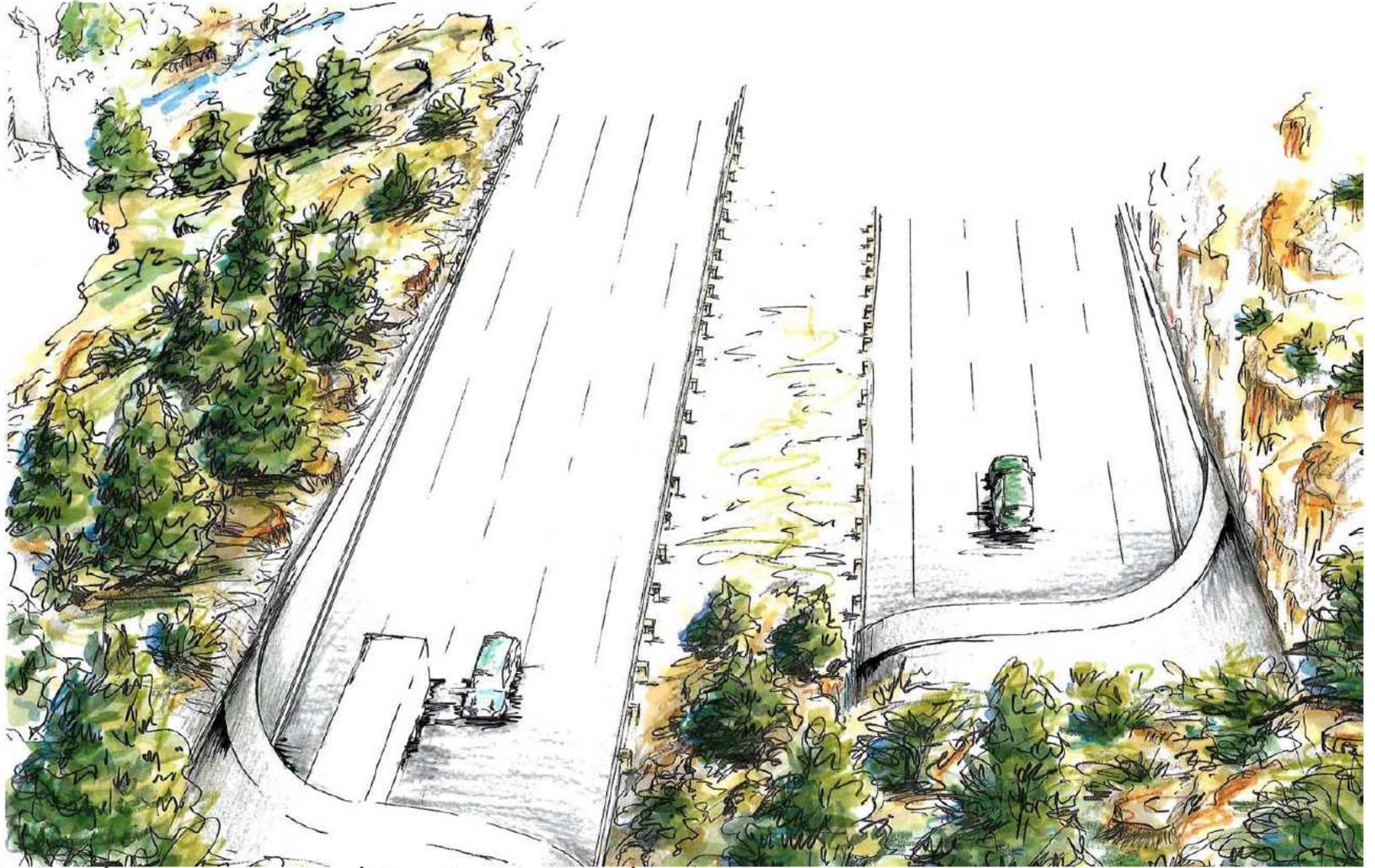
Proposed Solutions: Tunnel Portals



Twin Tunnels Option A

Final View 1 - West Portals

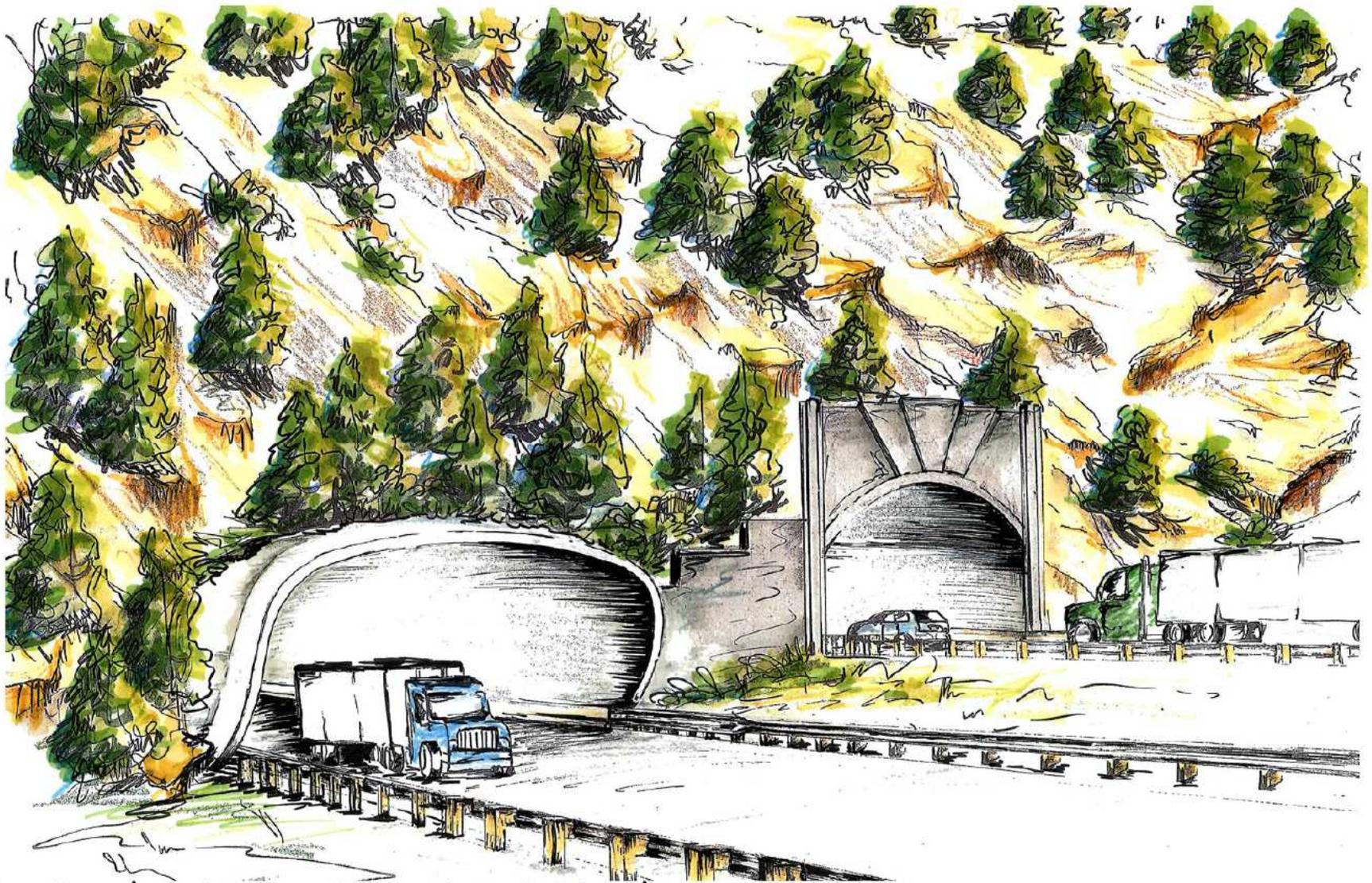
Proposed Solutions: Tunnel Portals



Twin Tunnels Option A Final View 2 - West Portals



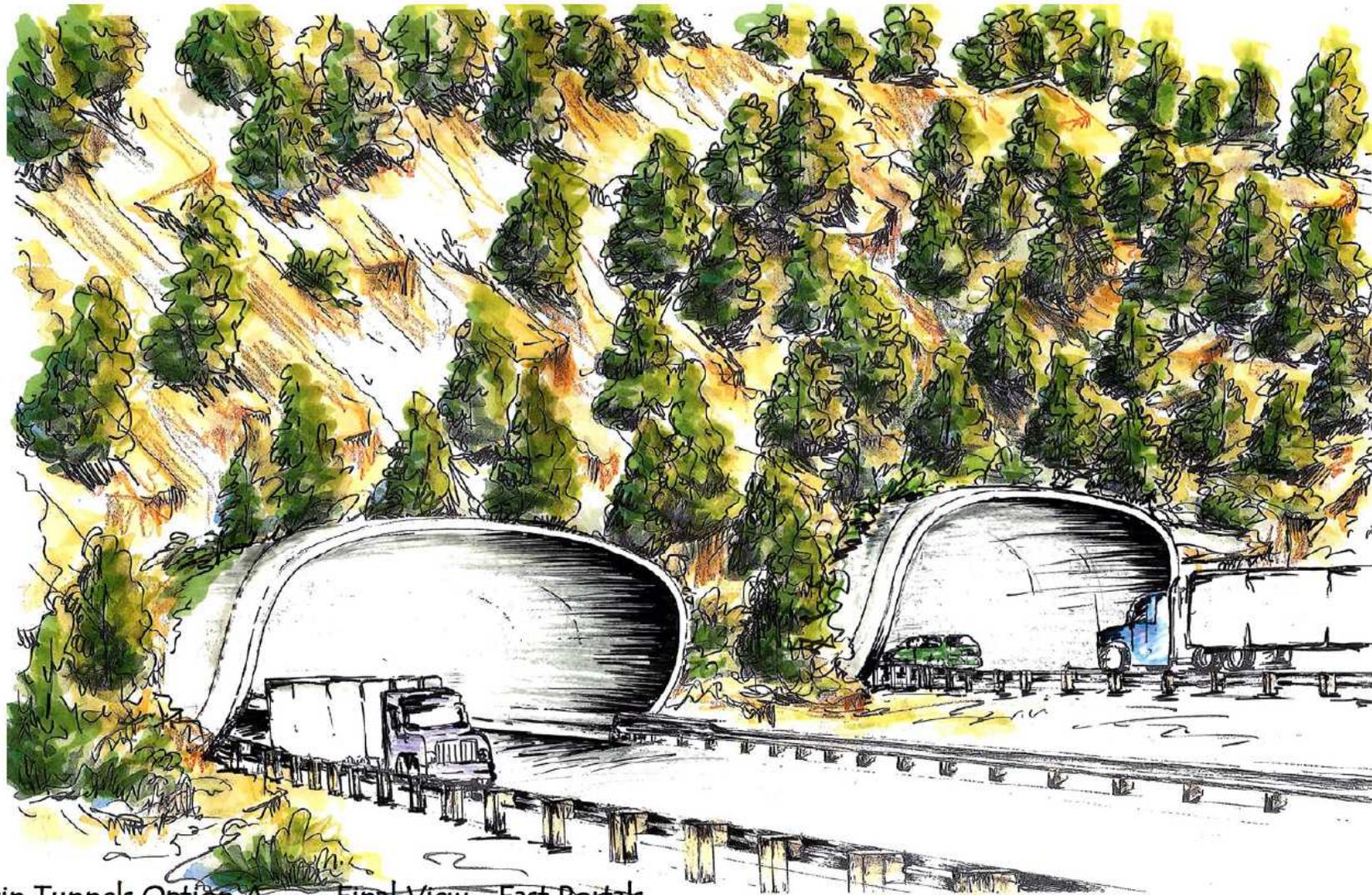
Proposed Solutions: Tunnel Portals



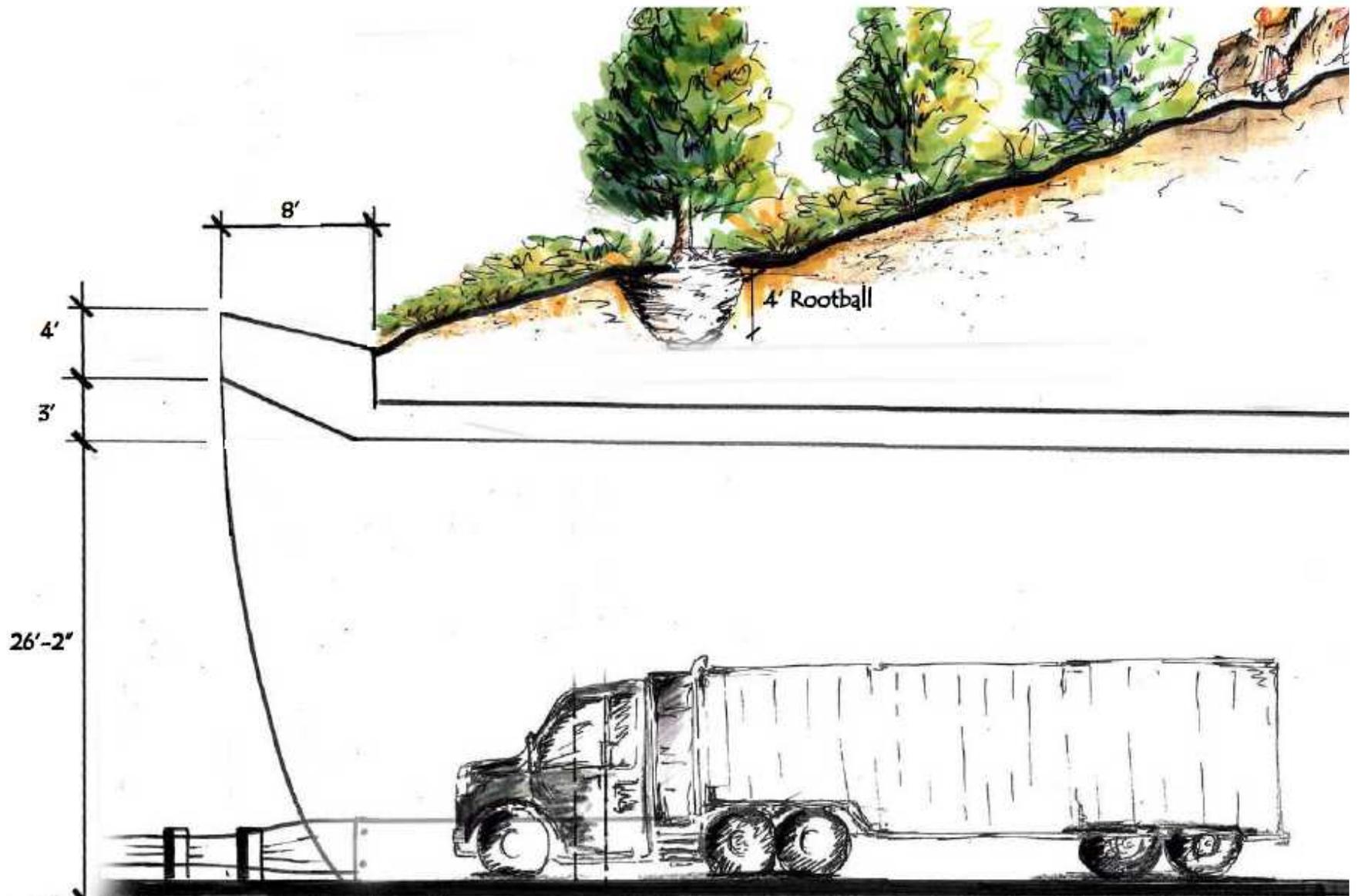
Twin Tunnels Option A Interim View - East Portals



Proposed Solutions: Tunnel Portals



Twin Tunnels Option A Final View - East Portals



Twin Tunnels Option A Section View



Wolf Creek

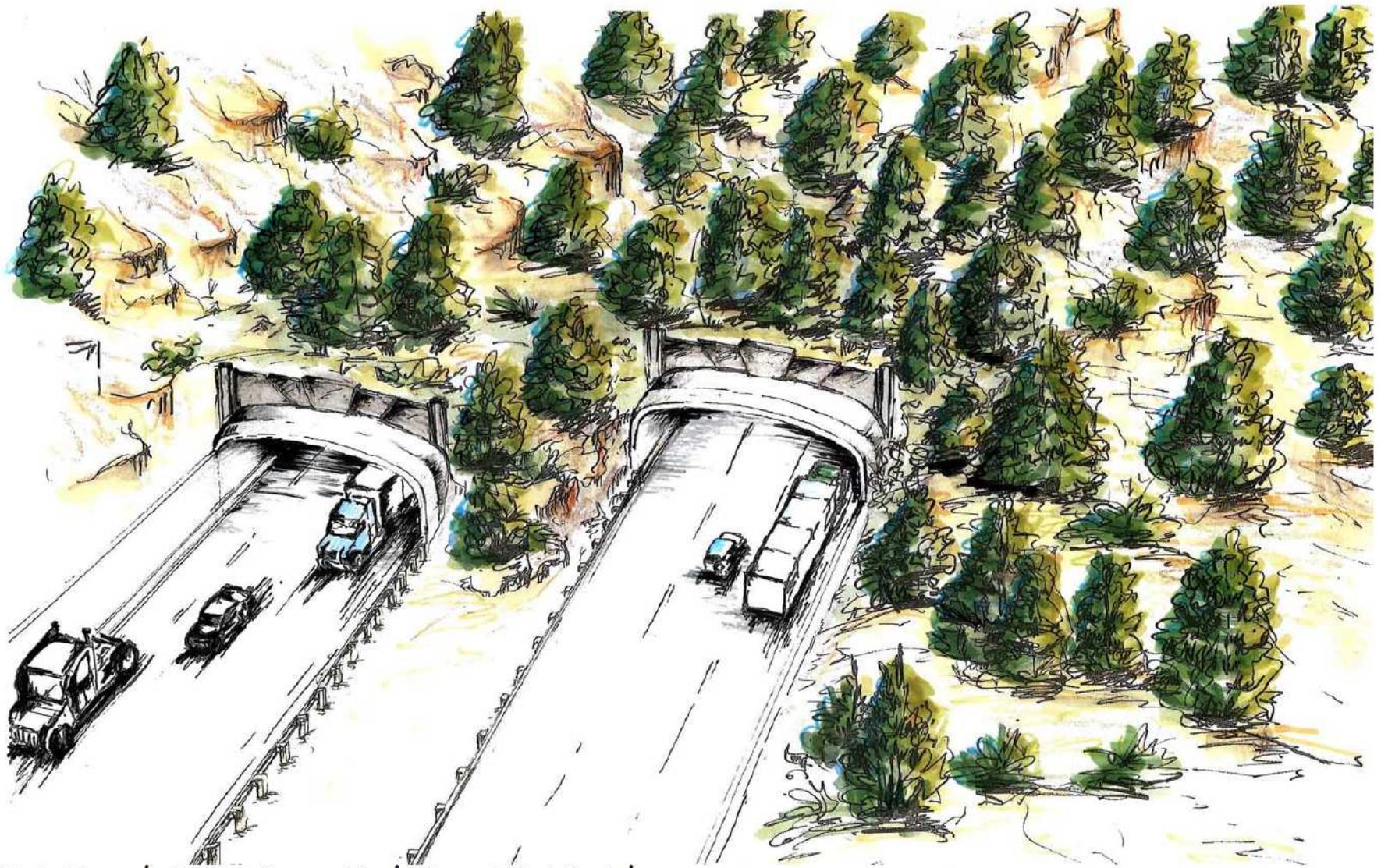


Glenwood Canyon



© Radek Tezaur

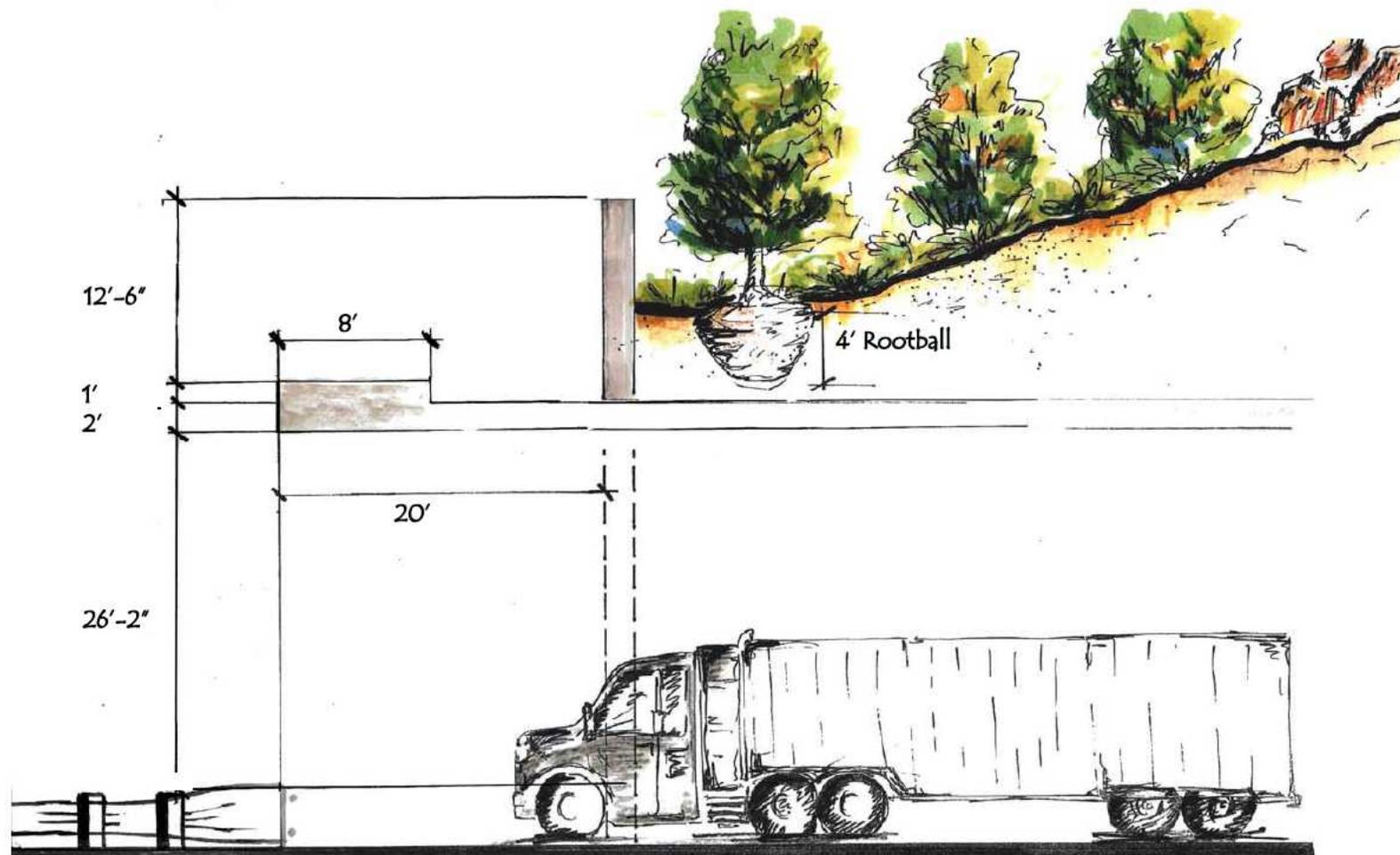
Proposed Solutions: Tunnel Portals



Twin Tunnels Option B

Final View - West Portals

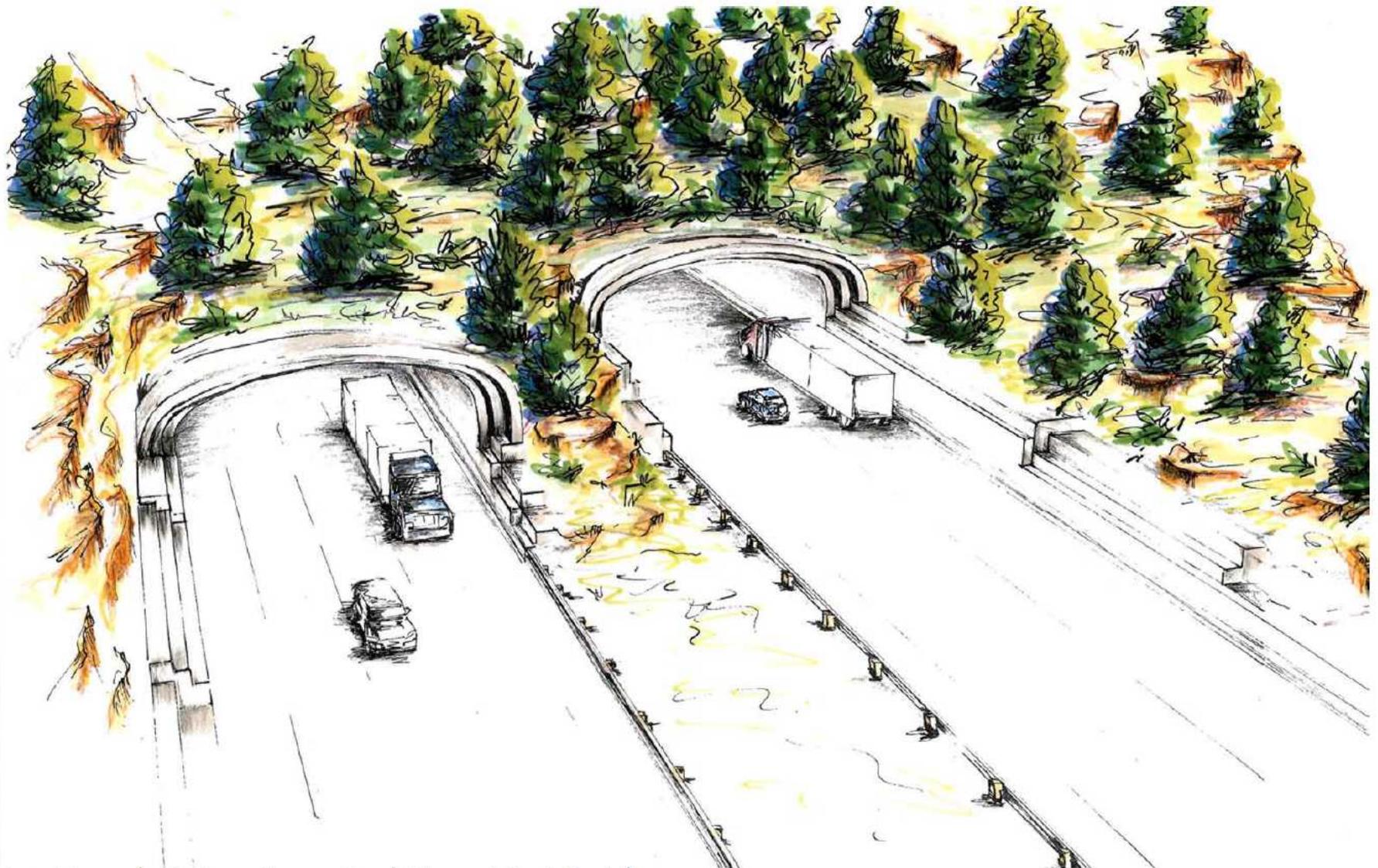
Proposed Solutions: Tunnel Portals



Twin Tunnels Option B

Section View

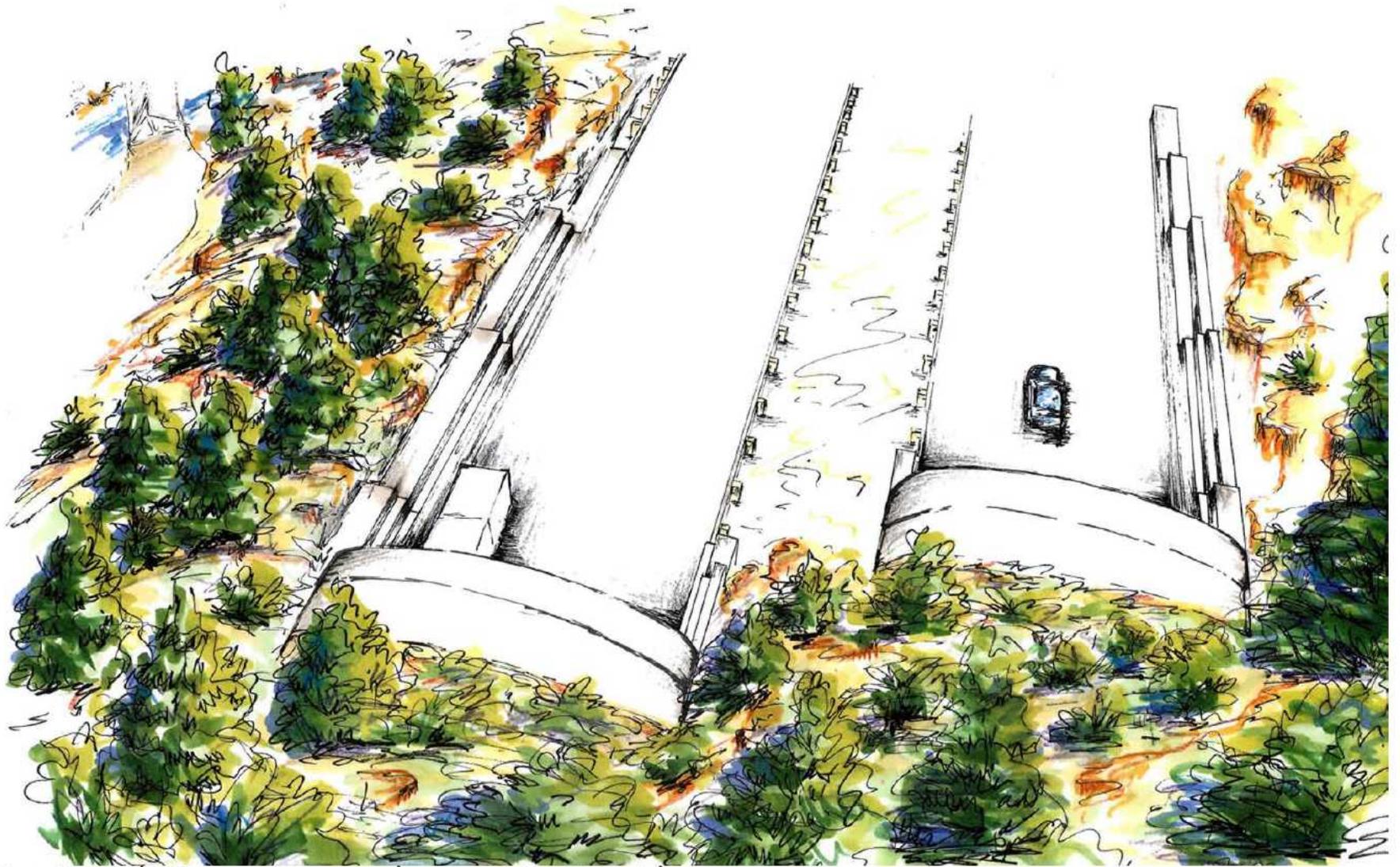
Proposed Solutions: Tunnel Portals



Twin Tunnels Option C

Final View - West Portals

Proposed Solutions: Tunnel Portals

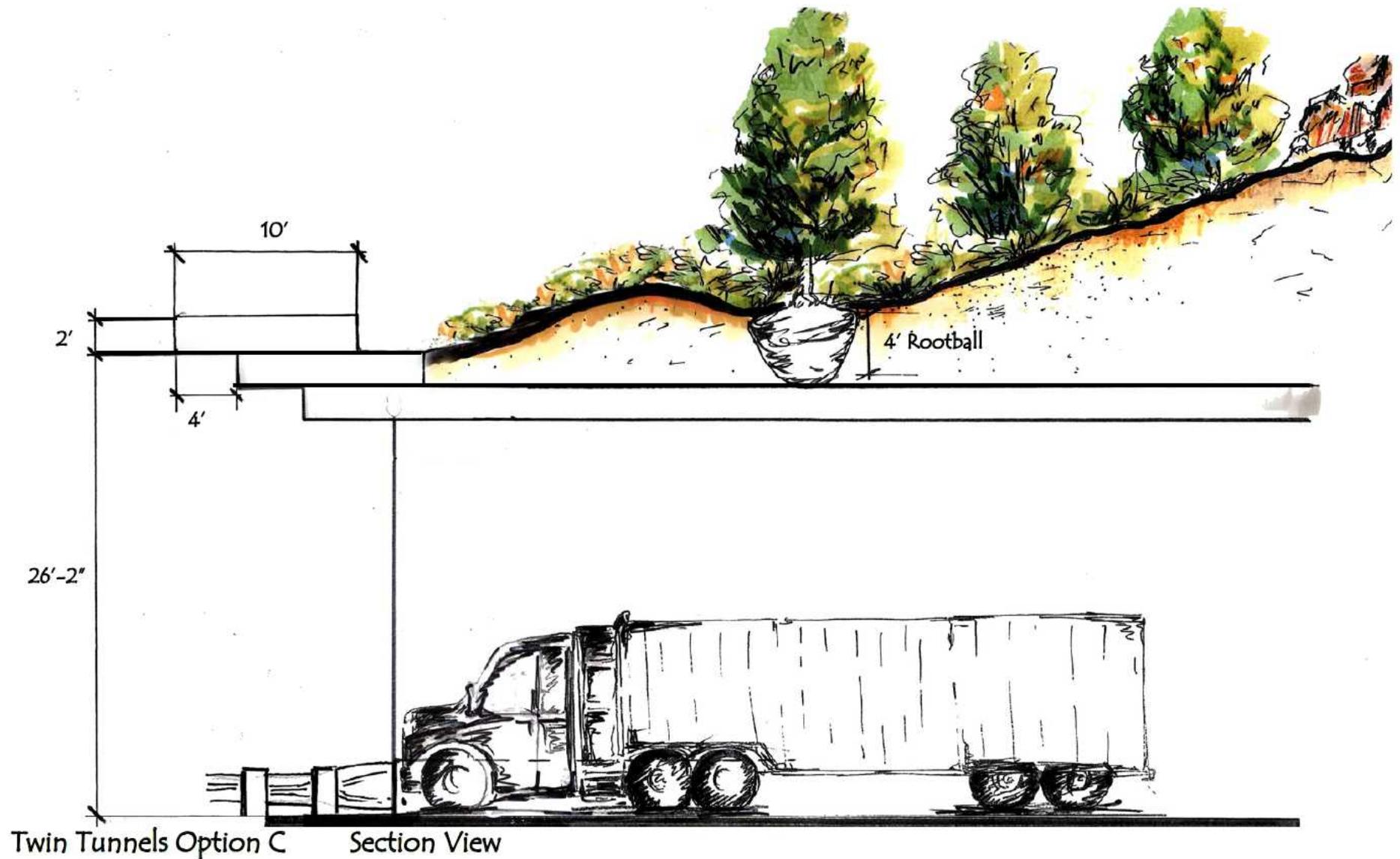


Twin Tunnels Option C

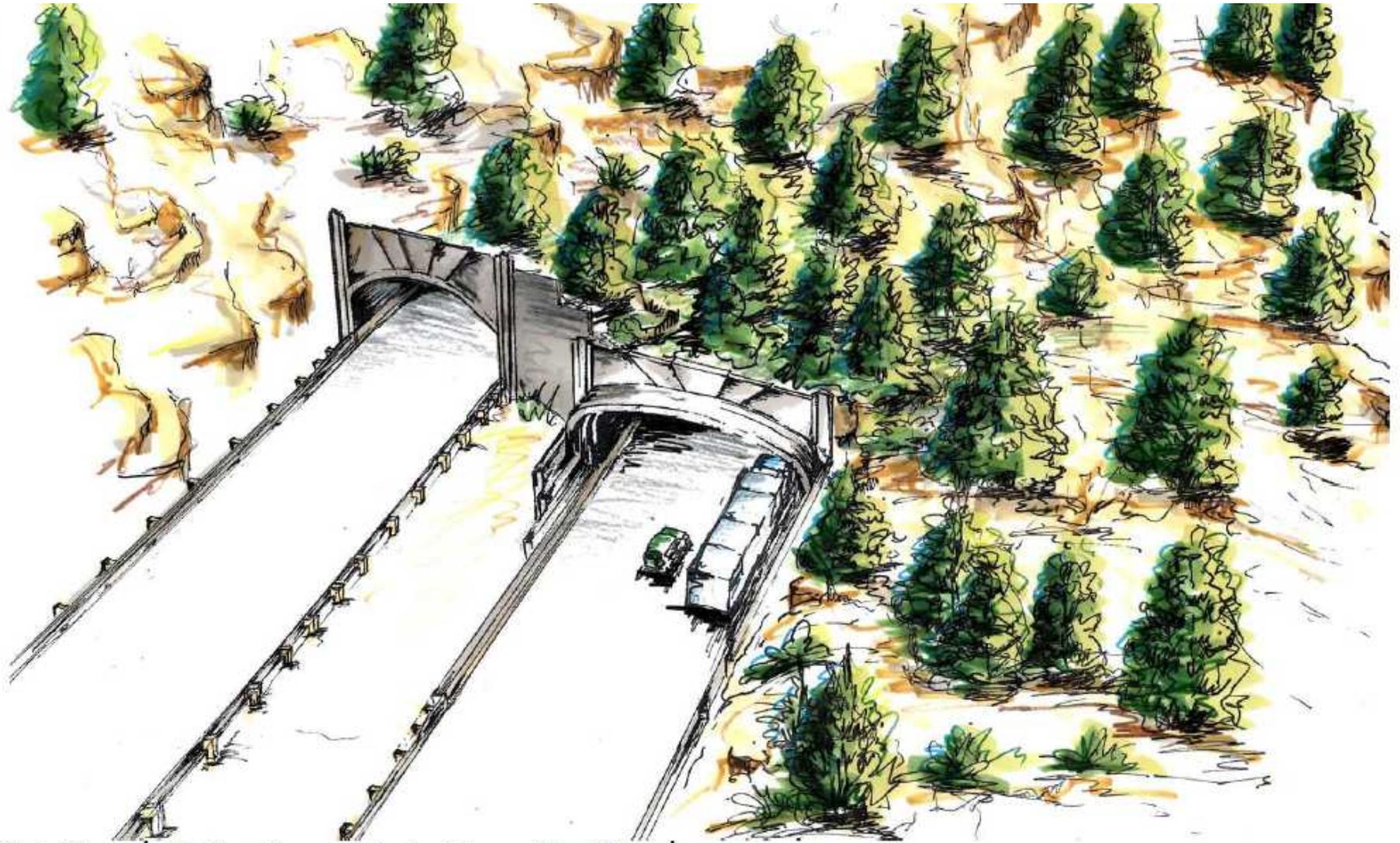
Final View 2 - West Portals



Proposed Solutions: Tunnel Portals



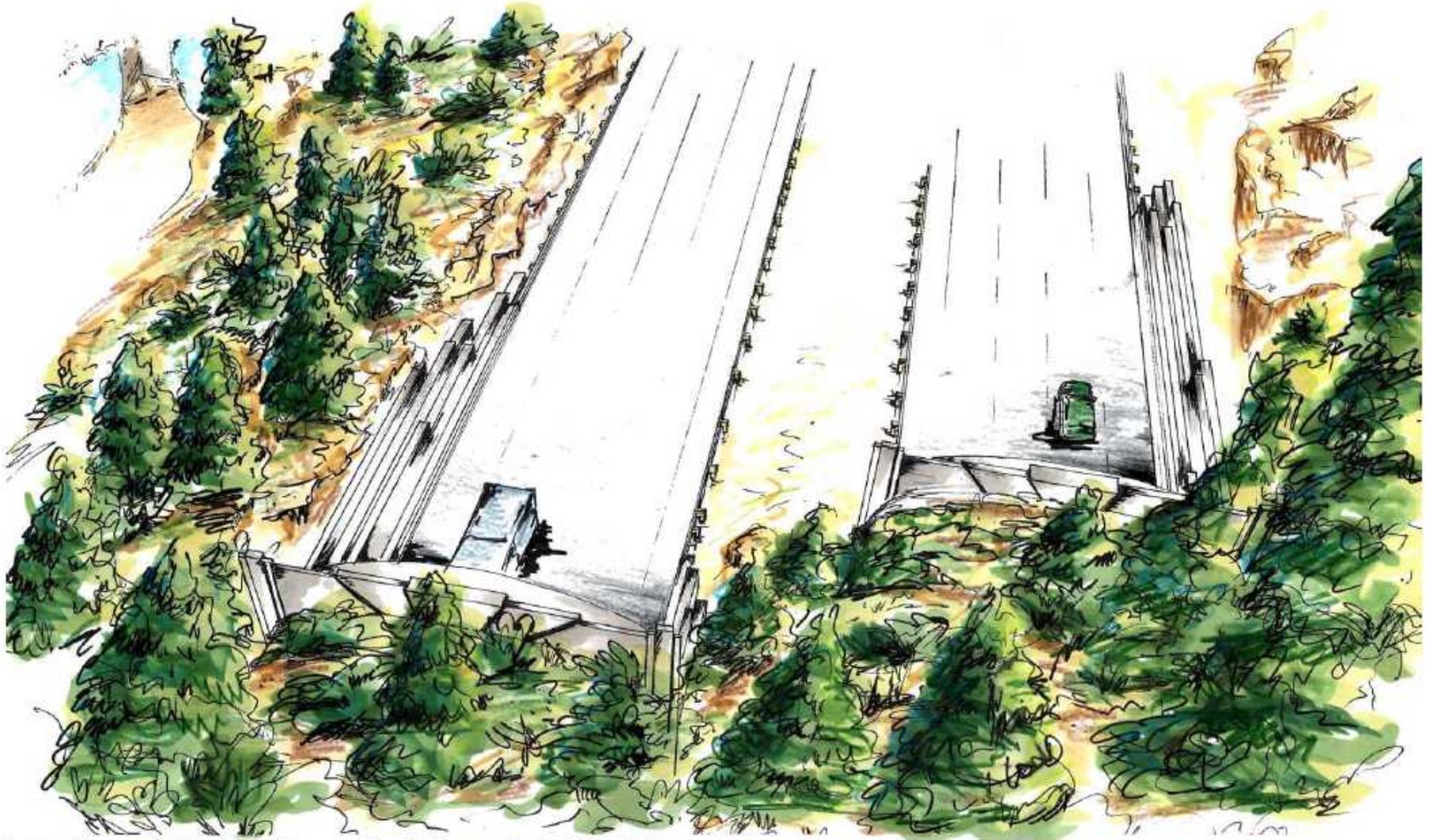
Proposed Solutions: Tunnel Portals



Twin Tunnels Option D

Interim View - West Portals

Proposed Solutions: Tunnel Portals



Twin Tunnels Option D

Final View - West Portals

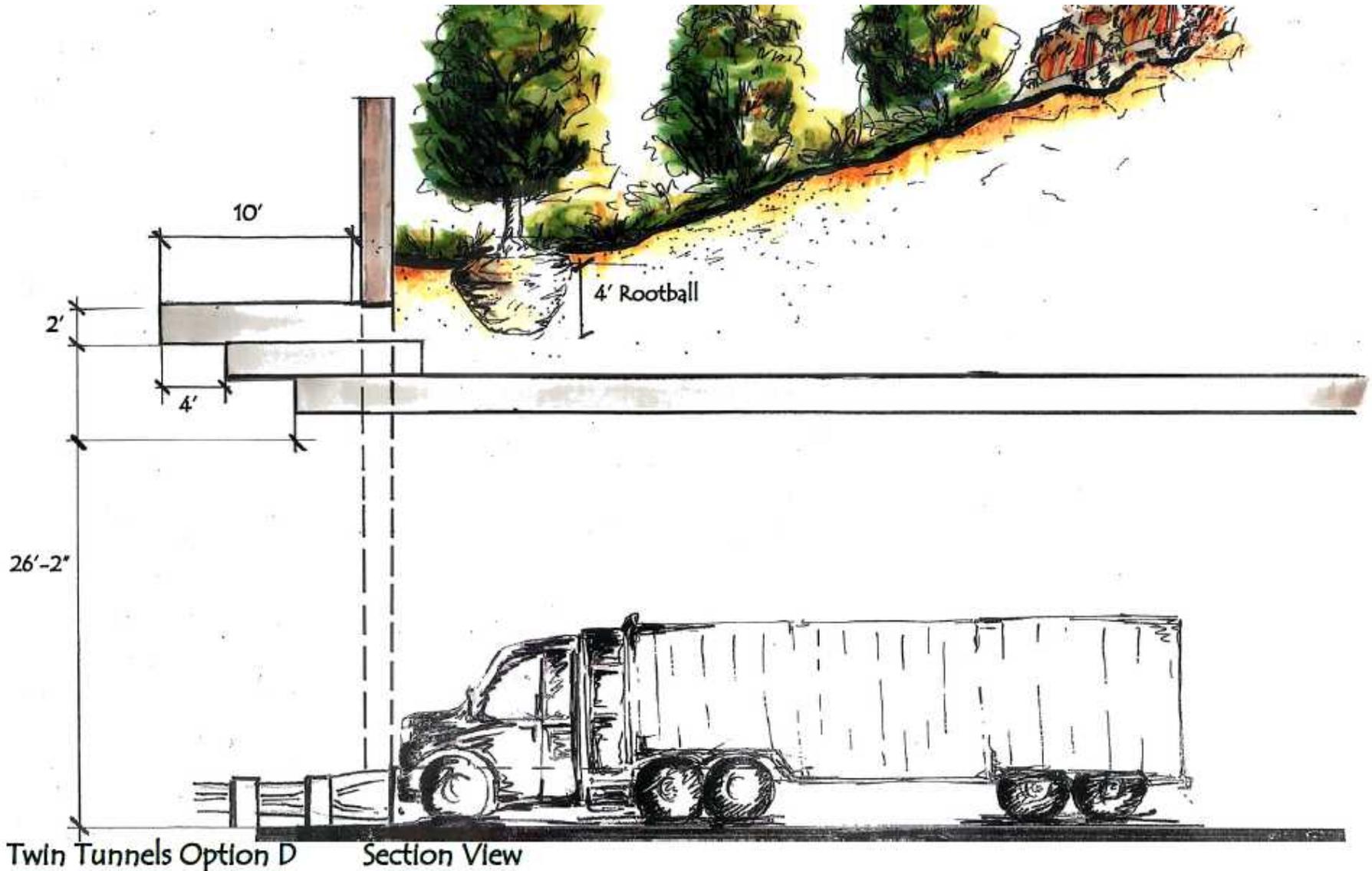


Proposed Solutions: Tunnel Portals



Twin Tunnels Option D Final View - East Portals

Proposed Solutions: Tunnel Portals

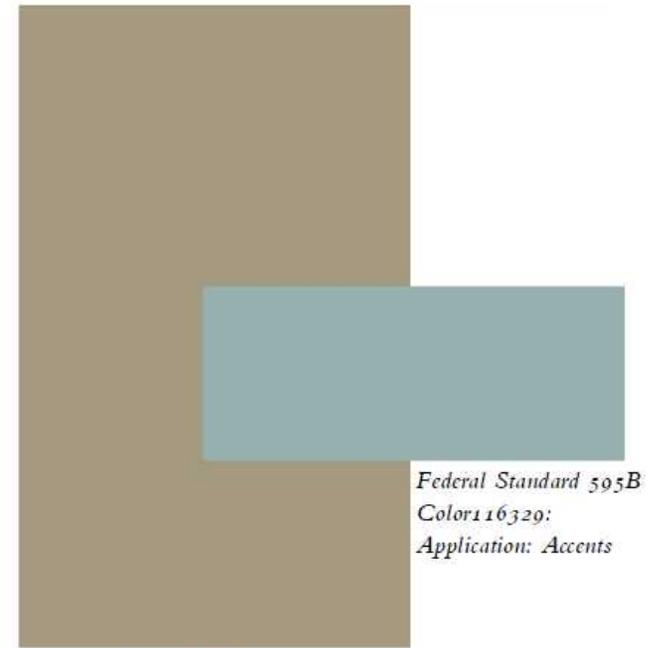


Proposed Solutions: Coatings and Color

- » **Color decisions that have been made**
 - **Rockfall – site specific**
 - **Vertical elements - forest service brown**
 - **Sign posts, light poles, and type 10 and w-beams barriers**
 - **Tunnel Interior - white epoxy up to spring line, grey concrete arch**
 - **Fill Walls – beige (matching 314)**
 - ***New chain station lights – match existing chain station lights**

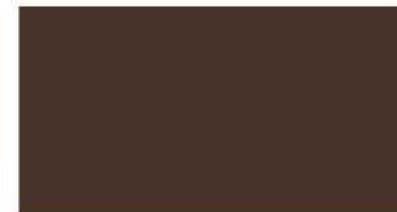
 - ****All decisions are consistent with aesthetic guidelines except existing chain station***

Color Palette



*Federal Standard 595B
Color 116329:
Application: Accents*

*Federal Standard 595B Color 30372:
Application: All road structures*



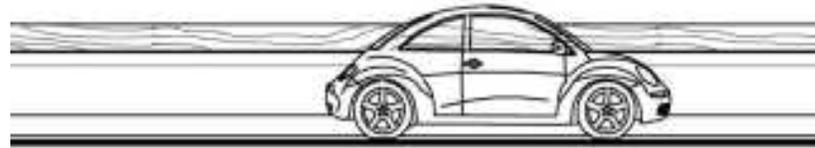
*Federal Standard 595B Color 20059:
Application: All vertical features.*



Proposed Solutions: Coatings and Color

» Color decisions that still need to be made

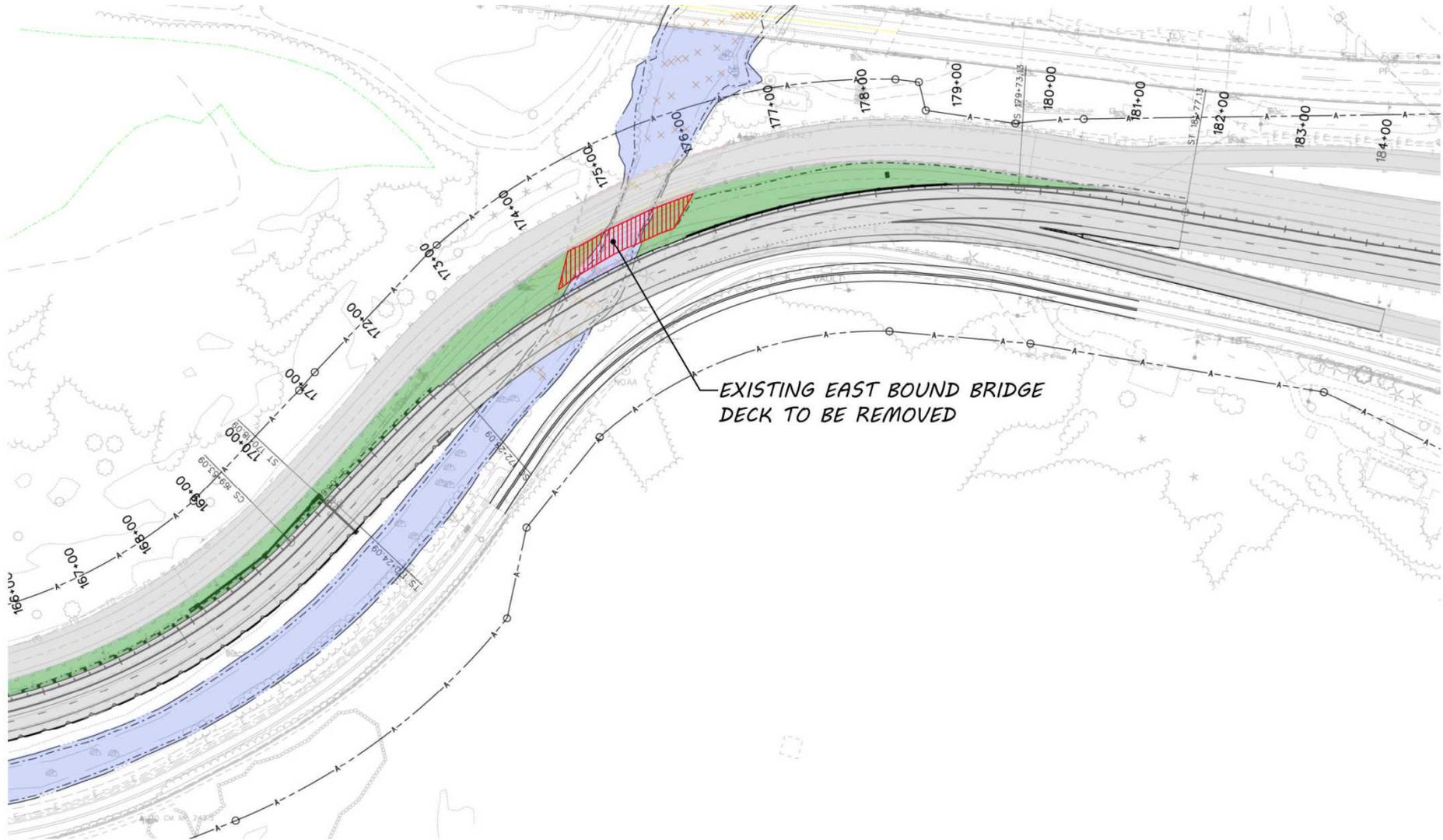
- Tunnel Portals
- Median barrier
- Bridge
- CR 314 cut walls



» Next steps:

- Look at 314 test panels
- Confirm maintenance needs and consistency with aesthetic guideline process
- Determine appropriate application process (paint, stain, coating or colored concrete)

Proposed Solutions: Bridge Gap



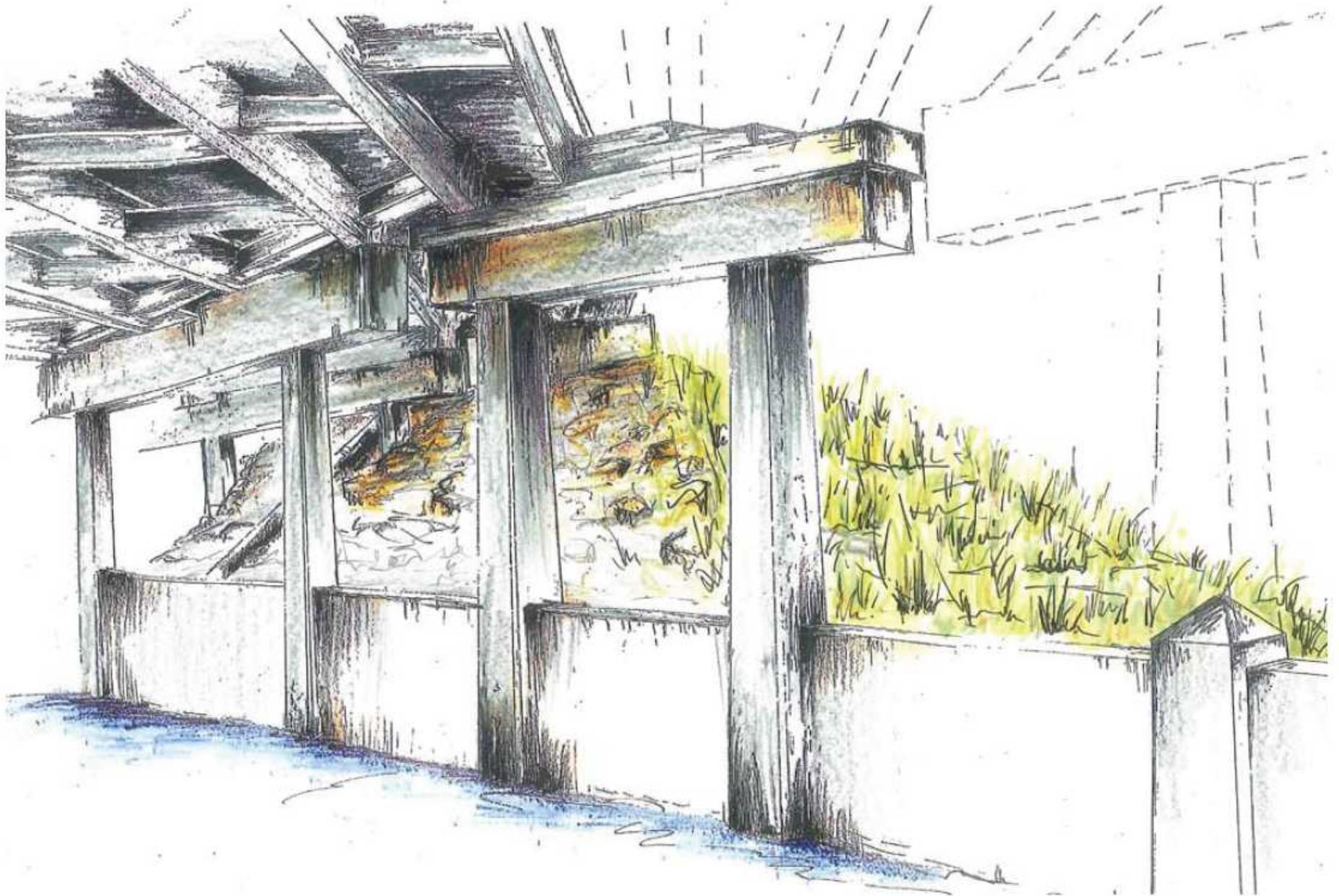
CLEAR CREEK BRIDGE GAP - AFTER CONDITION



Clear Creek Deck Removal



Clear Creek Deck Removal - Before



Clear Creek Deck Removal - After

Follow Up: Public Information

- Determined need for communications campaign to:
 - Enable consistent messaging
 - Ease the project's complexity for the end-user
- Campaign serves as a “hook” to communicate three primary messages:
 1. Construction – Detour coping information and construction impacts
 2. Economic – Mountain communities and recreational amenities are open for business
 3. Vision – I-70 Mountain Corridor overall plans and future



Follow Up: Public Information

- Focus on Twin Tunnels and some vision
- No new logos
- Implement through earned communications program with partners



Follow Up: Public Information Option 1: Project Focused

TWIN TUNNELS *eastbound*

Idaho Springs/Clear Creek County



Follow Up: Public Information

Option 1: Project Focused

TWIN TUNNELS

eastbound

WHY ARE WE BUILDING THIS PROJECT?

- 2** Relieve roadway congestion, improve travel times and safety
- 2** Launch improvements to the I-70 Mountain Corridor
- 2** Preserve what makes Colorado's mountains unique

DURING CONSTRUCTION:

- You can get **2** your destination in the mountains
- Always **2** lanes open in each direction during peak hours
- Plan **2** stop for blasting

Get **2** the information
www.coloradodot.info/projects/i70twintunnels
303-555-1234

Idaho Springs/Clear Creek County 

I-70 Mountain Corridor

Follow Up: Public Information

Option 1: Project Focused

Web Button



GET 2 WHERE YOU NEED 2 GO:

- **BE SAFE WHILE YOU ENJOY CLEAR CREEK**
- **CALL 303-555-1234 FOR BLASTING TIMES**
- **PROCEED TO SAFE AREA WHEN DIRECTED**

TWIN TUNNELS
eastbound

Idaho Springs/Clear Creek County

I-70 Mountain Corridor



Project Oriented: Recreation Users

COME 2 VISIT IDAHO SPRINGS

VISIT, SHOP AND DINE DURING CONSTRUCTION

BUSINESS ACCESS



TWIN TUNNELS
eastbound

Idaho Springs/Clear Creek County

I-70 Mountain Corridor



Project Oriented: Business Access

Follow Up: Public Information Option 2: Theme Oriented

IT'S ABOUT: **TIME.**

WHY ARE WE BUILDING THIS PROJECT? IT'S ABOUT:

YOUR TIME: Relieving roadway congestion, improving travel times and safety

OUR TIME: Preserving the history and environment

TIME: Launching the I-70 Mountain Corridor improvements

DURING CONSTRUCTION, IT'S ABOUT:

HAMMERTIME: Prepare for short delays during blasting

TRAVEL TIME: Maintaining two lanes of traffic in each direction during peak hours

MOUNTAIN TIME: You can always get to your destination



TWIN TUNNELS EASTBOUND | Idaho Springs/Clear Creek County

www.coloradodot.info/projects/i70twintunnels | 303-555-1234

I-70 Mountain Corridor



Follow Up: Public Information Option 2: Theme Oriented

IT'S ABOUT : TIME.



TWIN TUNNELS EASTBOUND
Idaho Springs/Clear Creek County



Follow Up: Public Information Option 2: Theme Oriented

Web button



IT'S ABOUT: YOUR TIME.

TWIN TUNNELS EASTBOUND | Idaho Springs/Clear Creek County

[Click here for more information](#)

I-70 Mountain Corridor



Follow Up: Public Information Option 2: Theme Oriented

IT'S ABOUT: **TIMING YOUR TRIP.**

**BE SAFE WHILE
YOU ENJOY CLEAR CREEK**

**CALL 303-555-1234
FOR BLASTING TIMES**

PROCEED TO SAFE AREA WHEN DIRECTED

Follow Up: Public Information Option 2: Theme Oriented

IT'S ABOUT **IDAHO SPRINGS TIME.**

**VISIT, SHOP AND DINE
DURING CONSTRUCTION**

BUSINESS ACCESS



I-70 Mountain Corridor

TWIN TUNNELS EASTBOUND | Idaho Springs/Clear Creek County



Theme Oriented: Business Access

Follow Up: Public Information

- Implement campaign through:
 - CDOT website
 - Project signage
 - Flyers, fact sheets, newsletters and other collateral
- Focus on building partnerships with local chambers, cities, counties, visitor centers, resorts, hotels, local businesses and others
 - Incorporate web button onto sites
 - Distribute collateral such as flyers and project “prescription pads” fact sheet
 - Display posters and or other printed materials (table tents, etc.)



Follow Up: Incident Management Plan

- Conducted 3 meetings with emergency responders and key stakeholders
- Modified the incident management plan to account for the impacts of the project
- Most critical issue was the lack of a viable short term detour for incidents in project area - updated plan provides options
- Updated materials to be distributed to the emergency responders and key stakeholders



I-70 Mountain Corridor Traffic Incident Management Plan for Clear Creek County

Applicable September 2012 to
December 2013 during the Twin
Tunnel Construction Project

Revised for
**Twin Tunnels
Construction
Project
2012/13**

Prepared for:

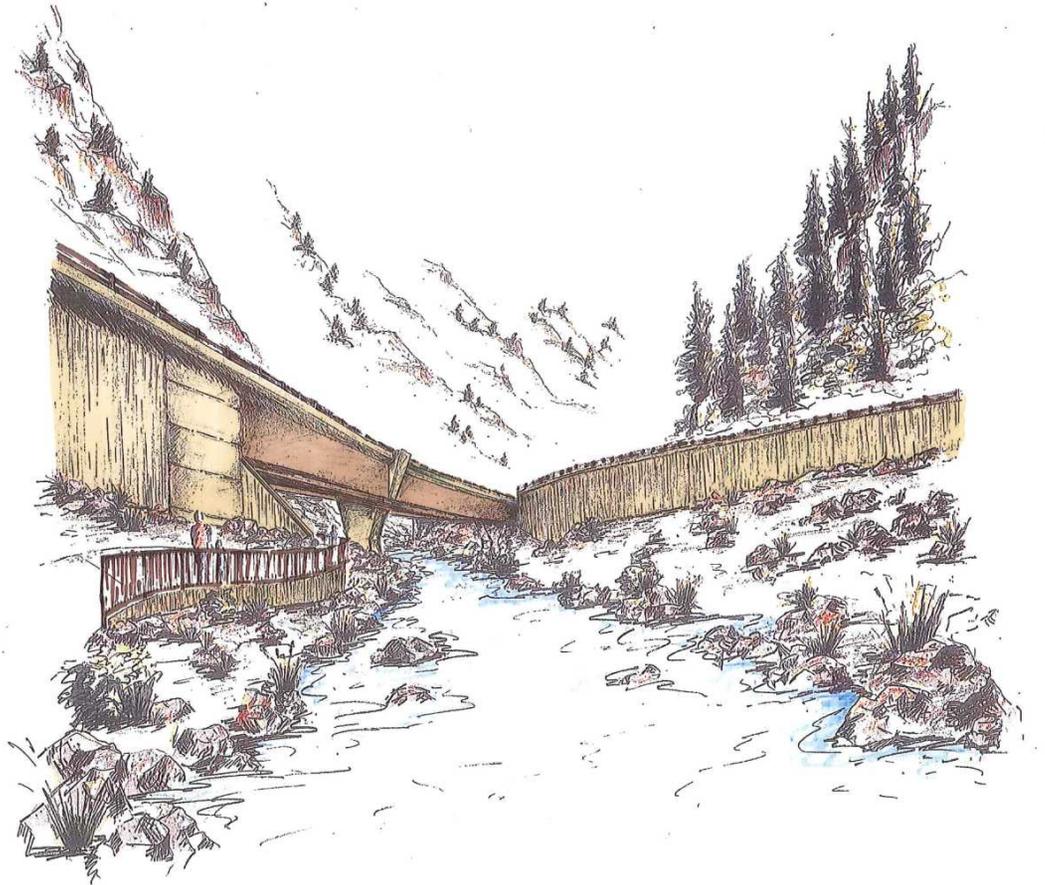
Colorado Department of Transportation
Region 1 and Clear Creek County, Colorado

Revised by Atkins

Revision to the Document Prepared by
Stantec Consulting Services Inc. and Stolfus and Associates
(April 2011)

Aesthetics Review: Bridge Area

- Bridge Structure
- Walls
- Colors
- Landscape / seeding mix
- Gap
- Future Trail



Landscape: Seeding Mix

COMMON NAME	BOTANICAL NAME	LBS. PLS / ACRE
Blue grama	<i>Bouteloua gracilis</i> 'Hachita'	0.5
Arizona fescue	<i>Festuca arizonica</i> 'Redondo'	1.0
Sheep fescue	<i>Festuca ovina</i>	0.6
Canada wildrye	<i>Elymus canadensis</i>	6.2
Sandberg bluegrass	<i>Poa sandbergii</i>	0.2
Western wheatgrass	<i>Pascopyrum smithii</i> 'Rosanna'	6.5
Mountain brome	<i>Bromus marginatus</i> 'Bromar'	4.0
Prairie junegrass	<i>Koeleria macrantha</i>	0.1
Slender wheatgrass	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i> 'Pryor'	1.0
Oats	<i>Avena sativa</i>	3.0
Blue flax	<i>Linum lewisii</i>	0.5
Rocky Mountain penstemon	<i>Penstemon strictus</i>	1.0
Yarrow	<i>Achillea millefolium</i>	0.1
Sulfur flower	<i>Eriogonum umbellatum</i>	1.0
TOTAL		25.7



Next Steps

- Recap Action Items from Today's Discussion
- Agenda for September 27th Technical Team Meeting in Golden
 - » Proposed Solution
 - Infrastructure in the Median
 - » Follow-up
 - Tunnel Portal
 - Lighting
 - Coatings/Color
 - Signing
- Upcoming meetings – only one per month:
 - » October 25th (4th Thursday)
 - » November 15th (3rd Thursday)
 - » December 27th (4th Thursday) – cancel or reschedule?



END OF PRESENTATION

